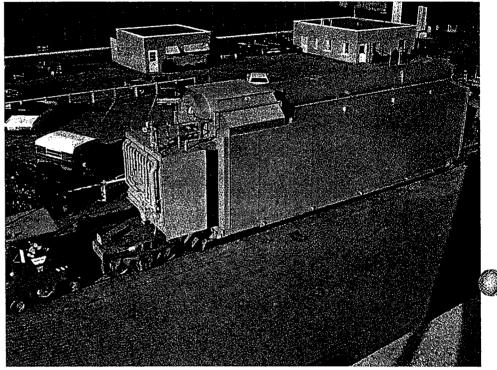


Man has always strived to harness air, water, fire, and products of the earth to save his own energy and to perform useful work. Ever since the first century, when Hero of Alexandria utilized these elements to build a primitive steam reaction turbine. man has devised numerous ways of harnessing steam for energy. Through the centuries, man, in his quest for more capacity, more power, and more efficiency from the same vessel, improved and revised the use of steam for energy. History too, through the demands of the industrial revolution, forced man to abandon manual labor, the horse and the sail for better energy alternatives.

A company named Zurn Industries, Inc., saw its future in steam power. Throughout the years the Company was to meet demand after demand for its ever-expanding line of energy systems. In fact, the Company was to pioneer many developments in designing and constructing ways to harness steam energy. As demands grew, so did the steam capacity - and the steam generator moved from the factory to the field-erected version where space was not so limiting. But field construction costs and capital expenditures grew, too, and along with them the demand for higher capacity "package" steam generators. The Company responded with the development of the KEYSTONE Steam Generating System, a factory-assembled or modular field-erected energy "package" capable of producing 6,000 to 500,000 pounds-of-steam per-hour and more. The KEYSTONE is symmetrical in design, easy to ship, install, operate, and maintain and is available in design pressures up to 2000 PSIG and total steam temperatures to 1050° Fahrenheit. Custom-designed fuel burning systems provide the best method for firing gas and/or oil or for special applications such as utilizing carbon monoxide gases and a wide variety of other waste gases. Energy recovery and pollution control equipment complement the KEYSTONE for industrial, power, utility, and processing applications. Victory Energy has acquired the license to manufacture KEYSTONE Steam Generating Systems.



above

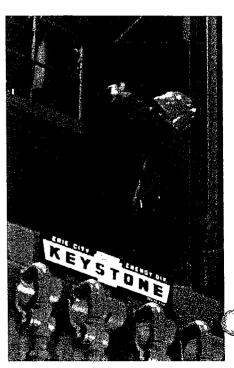
The KEYSTONE Steam Generator, a large capacity "package" unit, was developed to fill a critical void between large field-erected steam generators – which were time-consuming to assemble and costly to construct – and small factory-assembled steam generators which were limited in capacity.

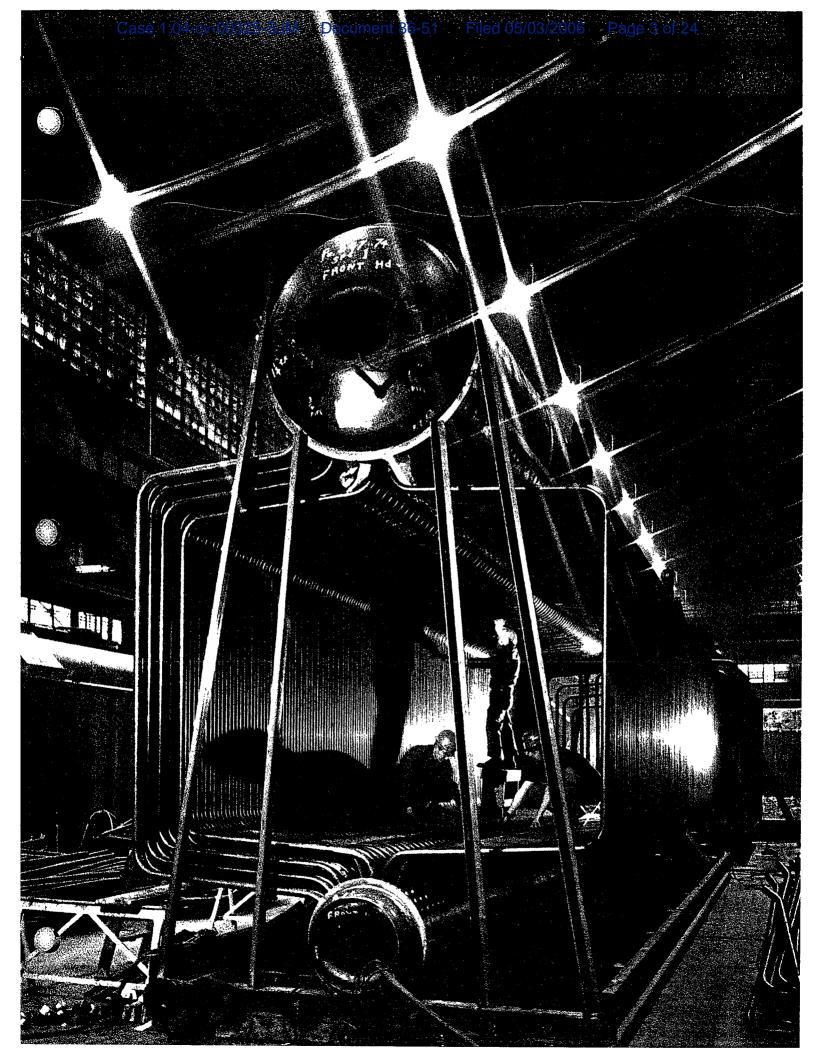
right

The KEYSTONE – named after the key block needed to build an arch – ushered in a new generation of "package" energy systems.

right hand page

KEYSTONE construction begins with the drums symmetrically supported on a longitudinal centerline. Tube rolling begins with the center furnace tubes and ends with the outer side wall and rear wall tubes. This unique furnace tube configuration provides for faster steam generating capabilities with lower furnace heat absorption rates. Once all tubes are in final position the unit is ready for hydrostatic testing at 1½ times the PSIG design pressure.







All basic components of the KEYSTONE are the same – only the physical dimensions vary to meet the required operating conditions.

Single Responsibility

Victory Energy designs, manufactures, and services every basic component in the steam generator – burner, superheater, and heat recovery systems to assure complete customer satisfaction.

Minimum Space

The uniquely-designed KEYSTONE is very compact and has minimal space requirements. Foundation area and installation costs are minimized by mounting the stack on the KEYSTONE'S top front gas outlet.

Minimum Maintenance

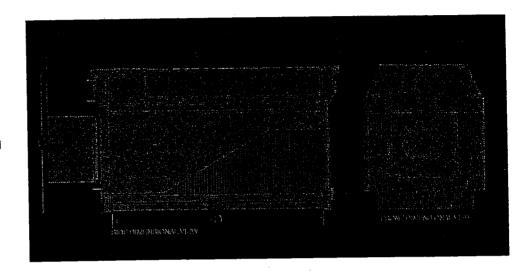
The KEYSTONE has no refractory baffles, headers or handhole plates to maintain. All tubes are 2" O.D. throughout permitting the use of a standard tube cleaner. Rapid water circulation keeps sludge and scale deposits to a minimum. Manholes in both ends of each drum allow easy access to the drum internals.

Pre-Engineered Piping ArrangementBecause each KEYSTONE is furnished as

a total package, the piping module is perfectly matched to the steam generator. The steam generator is designed for easy hookup to fuel, water, and electrical connections.

Economical Operation

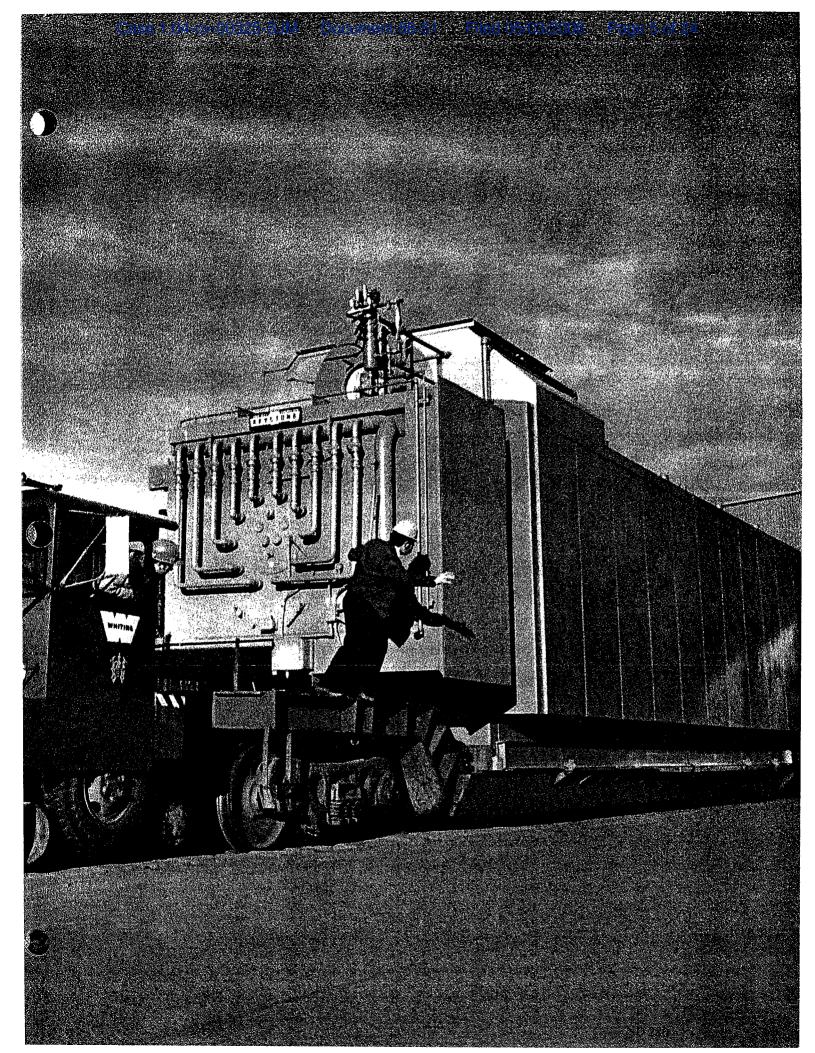
Pressurized firing insures accurate control of excess air. There is no infiltration of outside air to upset the preset fuel-air ratio and provides better burner performance and thermal efficiency. The engineered system of modulating controls proportions fuel and air as the load requirement changes.



Standard Dimensions*

Size	A Overali	B Overali	C Overall	D Base
No.	Length	Width	Height	Length
зм	15'-3"	7'-6"	12'-81/4"	9'-9"
4M	15'-11"	7'-6"	12'-8 ¹ /4"	10'-5"
5M	17'-3"	7'-6"	12'-8 ¹ /4"	11'-9"
6M	19'-3"	7'-6"	12'-8 ¹ /4"	13'-9"
7 M	19'-7"	9'-0"	12'-8 ¹ /4"	13'-1"
8M	20'-7"	9,-0,,	12'-8 ¹ /4"	14'-1"
9M	22'-3"	9'-0"	12'-8 ¹ /4"	15'-9"
10M	22'-5"	10'-0"	13'-3 ¹ /4"	16'-1"
11M	24'-7"	10'-0"	13'-3 ¹ /4"	18'-1"
12M	26'-7"	10'-0"	13'-3 ¹ /4"	19'-1"
13M	27'-7"	10'-0"	13'-3 ¹ / ₄ "	20'-1"
14M	25'-0"	11'-6"	14'-0"	20'-5"
15M	26'-8"	11'-6"	14'-0"	22'-1"
16M	28'-8"	12'-0"	14'-6"	24'-1"
17M	29'-8"	12'-0"	14'-6"	25'-1"
18M	30'-8"	12'-0"	14'-6"	26'-1"
19M	32'-8"	12'-0"	14'-6"	28'-1"
20M	35'-8"	12'-0"	14'-6"	31'-1"
21M	37'-8"	12'-0"	14'-6"	33'-1"
22M	39'-0"	12'-2"	15'-6"	34'-5"
23M	42'-0"	12'-2"	15'-6"	37'-5"
24M	46'-2"	12'-11"	16'-0"	38'-5"
25M	49'-0"	12'-11"	16'-0"	41'-3"
26M	52'-0"	12'-11"	16'-0"	44'-3"

^{*}Dimensions Subject to Change Without Notice





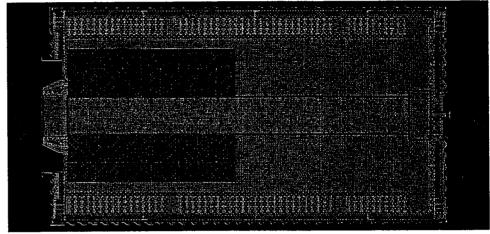
The unique design of the Victory Energy KEYSTONE boiler offers uniform gas distribution, equal expansion and vertical flue gas outlet. The symmetrical arrangement and short furnace tubes offer lower heat absorption and higher circulation ratios than other package steam generator designs.

The KEYSTONE Steam Generator furnace is composed of all 2" tangent or membrane tubes forming a water-cooled wall which directs the flow of gases from the front of the unit through the furnace and around both sides at the rear into the convection zones and toward the front of the unit with a top vertical flue gas discharge. (See Heat Flow Pattern at right.)

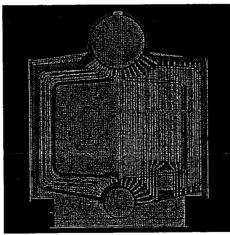
Heat Recovery Options

For maximum overall steam generator efficiency with low initial cost, Victory Energy offers combinations of heat recovery equipment. This equipment and auxiliaries can be mounted on top of the steam generator, saving valuable floor space and eliminating the need for excessive foundations. Finned Tube Economizers utilize often-wasted flue gas heat to increase feedwater temperature, thereby increasing efficiency and reducing fuel consumption. Tube and fin spacing within each Economizer are arranged for the particular fuel or fuels being fired.

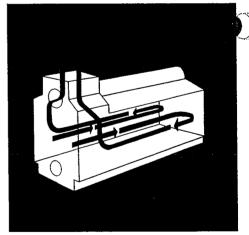
Victory Energy also offers regenerativetype air preheaters as another heat recovery option. In the regenerative air preheat method, heat from flue gas is transferred to incoming cold air by continuously rotating heat transfer elements. This greatly increases the temperature of incoming combustion air which maximizes fuel economy and operating efficiency. Air preheaters can also be mounted on top or off to the side, of the steam generator, according to plant requirements.



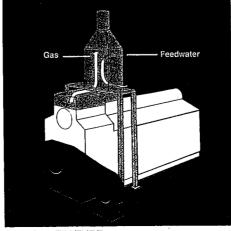
KEYSTONE PLAN VIEW



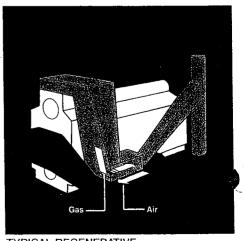
CROSS SECTION VIEW



HEAT FLOW PATTERN



TYPICAL FIN TUBE **ECONOMIZER**



TYPICAL REGENERATIVE TYPICAL THE ALE AIR PREHEATER ND 281

Case 1:04-cv-00325-SJM Document 86-51 Filed 05/03/2006 Page 7 of 24

1 Two-Drum Symmetrical Arrangement

All tubes terminate in the large drums with no intermediate headers. The generous steam-relieving surface of the full-length drum contributes to stable water level and high steam purity.

2 Burners

A full selection of *Victory Energy* fuel burning systems with the ability to burn a large variety of fuels enhances the unit responsibility.

3 Membrane Furnace Tube Walls

The furnace side walls are formed by membrane tubes which provide 100% water-cooled surface resulting in an extremely low heat absorption rate.

4 Convection Tubes

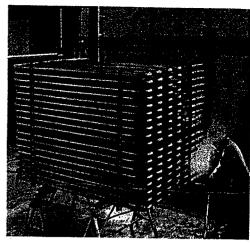
In-line convection zone tubes insure adequate flow area and flue gas contact with the heating surfaces to maximize heat transfer.

5 Water Wall Construction

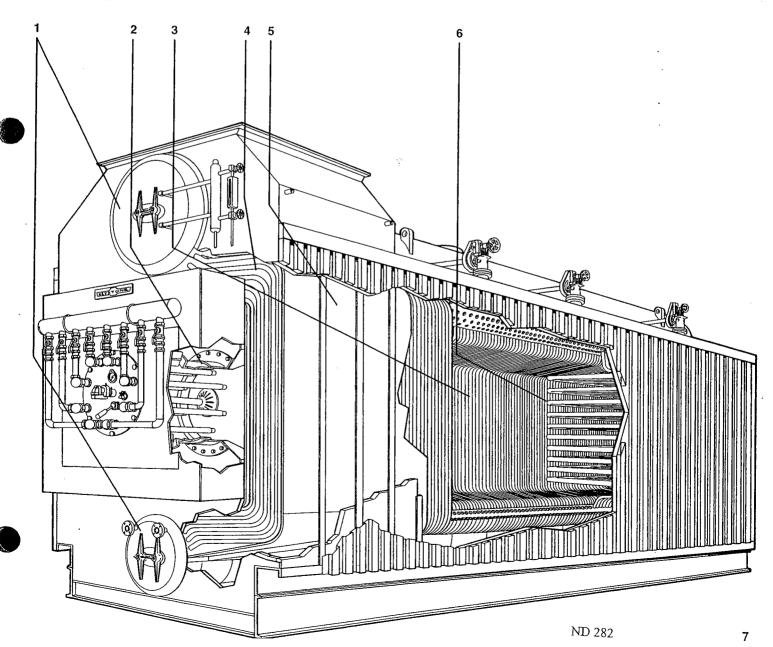
Membrane outside tubes with a reinforced welded inner seal casing provides a gas-tight envelope. Jacketed insulation is applied for minimum heat loss. An outer ribbed or flat lagging adds final exterior protection.

6 Drainable Type Superheater

A separate superheater module is installed in the rear of the furnace. This arrangement is characteristic of a flat, total steam temperature curve throughout the normal operating range of the unit. Superheater headers are located outside of the flue gas area.



The superheater is completely assembled, welded, and stress relieved prior to installation through the KEYSTONE rear wall area. Alloy tubing and one (1) ppm steam purity insure exacting performance and long operating life to this very critical component of the steam generator.



Document 86-51 CONSTRUCTION



Victory Energy's design, engineering and manufacturing advances offer a complete range of wall construction technology.

FURNACE WALLS Side Walls

☐ Membrane tube construction (Figure A) is standard on all KEYSTONES.

Rear Wall

- ☐ Water-cooled Tube and Tile (Figure B) is standard on smaller capacity units.
- ☐ Water-cooled and Welded (Figure C) construction for additional heating surface and minimum refractory maintenance on high capacity units.

Front Wall

- ☐ Water-cooled and Welded Walls available.
- ☐ Figure D shows how the burner throat is an integral part of the water-cooled front wall.

CONVECTION SIDE WALLS

☐ Membrane Construction (Figure A) is standard on all KEYSTONES.

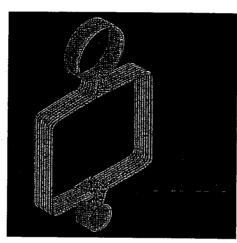


FIG. A) MEMBRANE TUBE CONSTRUCTION

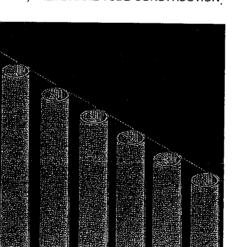


FIG. C) WATER-COOLED AND WELDED WALLS

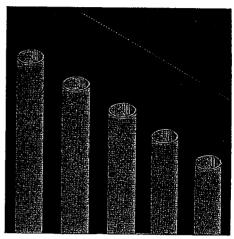


FIG. B) WATER-COOLED TUBE AND TILE

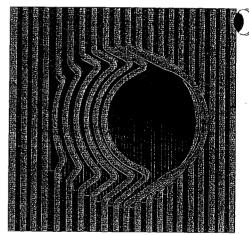
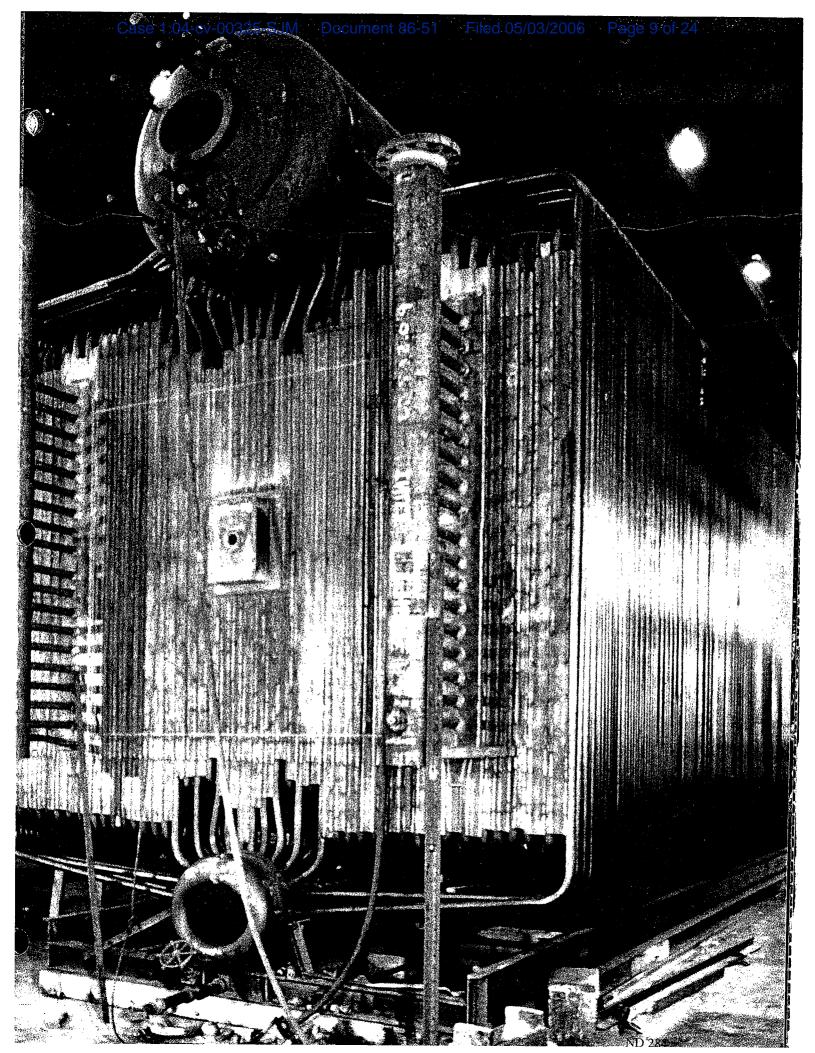


FIG. D) WATER-COOLED BURNER THROAT

right hand page

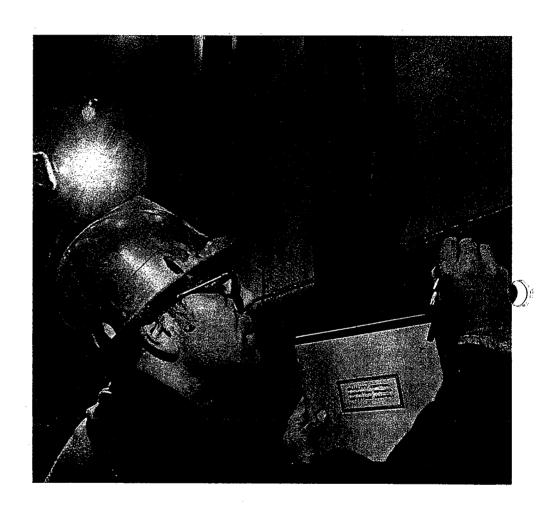
A Victory Energy KEYSTONE being constructed with a water-cooled and welded rear wall. This construction offers the ultimate in shop assembled steam generator design, increasing reliability and decreasing maintenance costs.





Once a KEYSTONE is properly designed and detailed, each component is manufactured under a strict quality control program. Modern, speciallydesigned tools and equipment in the hands of qualified, experienced craftsmen produce a high quality product. Extensive work has been done in developing our Quality Assurance Manual which details step-by-step quality control at all levels material procurement, in-process checks at all stages, and final inspection. Mandatory check lists covering all operations check and double-check each operation. In addition to mandatory ASME, American Boiler Manufacturers Association and other code tests for pressure vessels, each unit receives air pressure tests on the inner casing and a complete electrical check-out.

Initial comprehensive and detailed engineering design assures an integrated package from varying components. Preliminary analysis is conducted, utilizing computer technology to properly select and calculate design performance, and specify each component so that every requirement is presented with an integrated system at the best possible economy. All input data is carefully analyzed and designs are altered if necessary.





above

Uniform construction is assured with a step-bystep quality control program.

left

Detailed engineering design is an important preliminary element for assuring an integrated package from varying components. A Project Manager is assigned to each contract to not only review initial engineering specifications but also to coordinate the many phases of total job responsibility.

right hand page

Overall view of fabrication and assembly area to KEYSTONE Steam Generators.







The symmetrical design and balance of every KEYSTONE insures easy handling and installation. The KEYSTONE can be skidded, jacked, or rigged without the use of special counterweights or slings. An ordinary concrete slab is all that is required to support the base. After the necessary fuel, water, and electrical connections are made, the KEYSTONE is ready to operate.

The overall physical dimensions of large factory-assembled KEYSTONE steam generators are determined by transportation clearances. Factoryassembled units can be shipped via standard rail car, low-boy truck, ship or barge, or our own specially-designed depressed-bed railroad flat car. Direct access to the Port of Catoosa opens up shipping channels over a vast area.

When it becomes necessary to field-erect a unit, every effort is made to transport pre-fabricated sections that can be "packaged" on-site to minimize field expense.

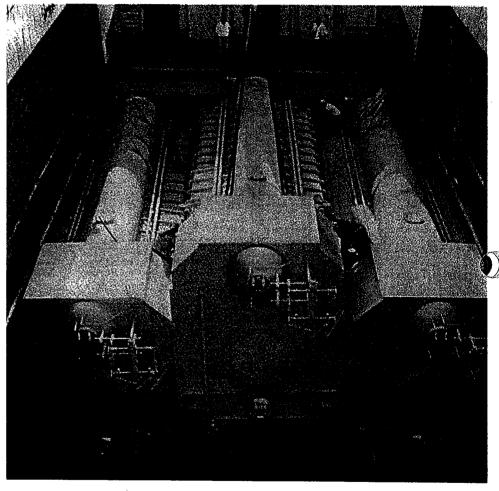
The compact design of the KEYSTONE not only aids in installation, but also in shipping, as demonstrated by this KEYSTONE being tightly "nestled" into the hull of a ship, ocean-bound via the Port of Catoosa.

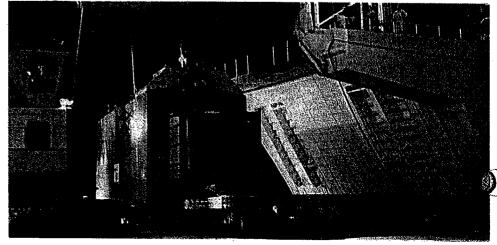
bottom right

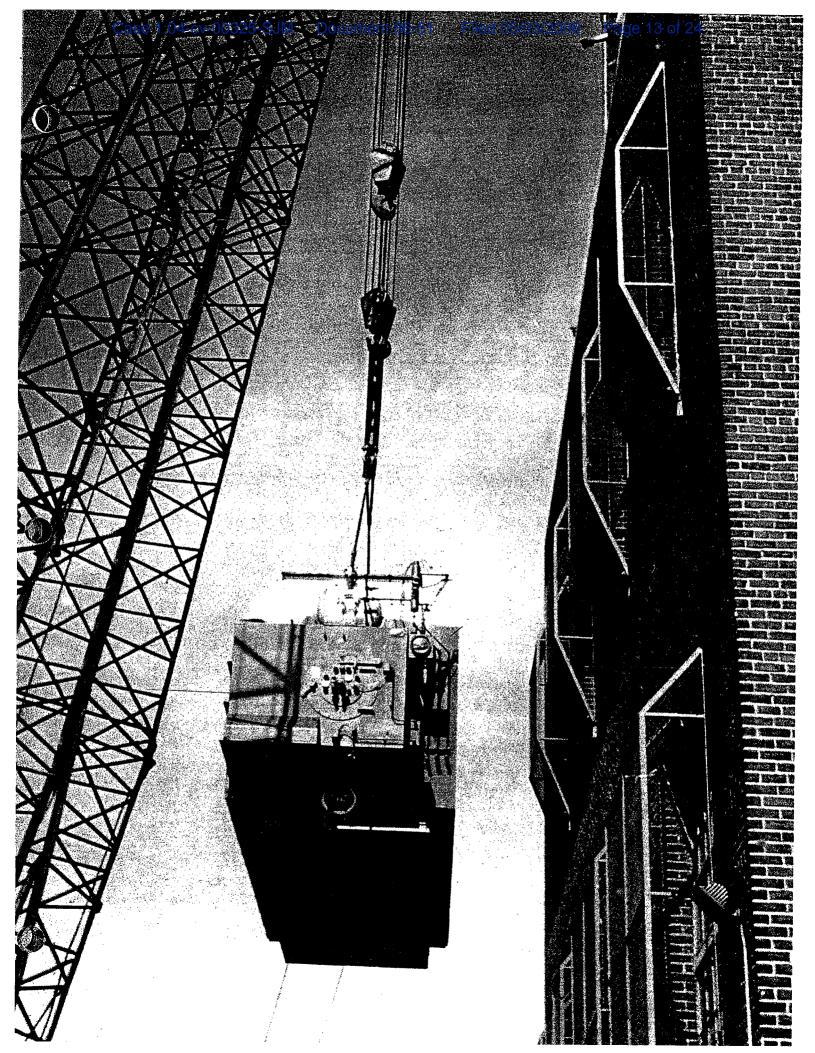
Sometimes it is advantageous to ship via long stretches of unobstructed waterways easily accessible through the Port of Catoosa.

right hand page

KEYSTONES are often the first system to be installed while new buildings are being. constructed. Note the symmetrical balance of this 200,000 pounds-of-steam-per-hour steam generator being hoisted into final position.









Victory Energy employs a large, experienced service organization which can help you in all your field service requirements. Skilled service engineers can supervise installation, start-up the unit and adjust it for optimum performance. They will instruct your operators on proper operation and maintenance of the unit for a long, trouble-free life. If, due to an emergency, you should ever need service at a moment's notice, necessary manpower and equipment can be rushed to your site to make certain the unit will be back on line with a minimum of downtime.

right

A typical interior installation of a "packaged" KEYSTONE provides useful steam energy for heating and process systems at a major distillery. This 70,000 pounds-of-steam per-hour KEYSTONE, rated at 200 PSIG, burns natural gas and No. 2 fuel oil and is equipped with a fin tube economizer.

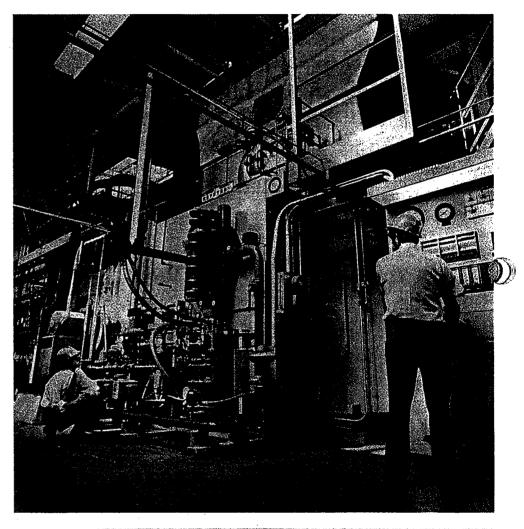
lower right

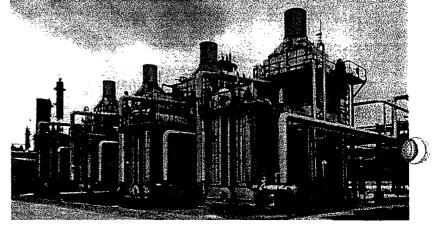
A battery of four field-erected KEYSTONES, installed over a period of several years to meet increasing demands of phased expansion of a petrochemical complex, provides 1,000,000 pounds-of-steam per-hour (250,000 each) at 650 PSIG.

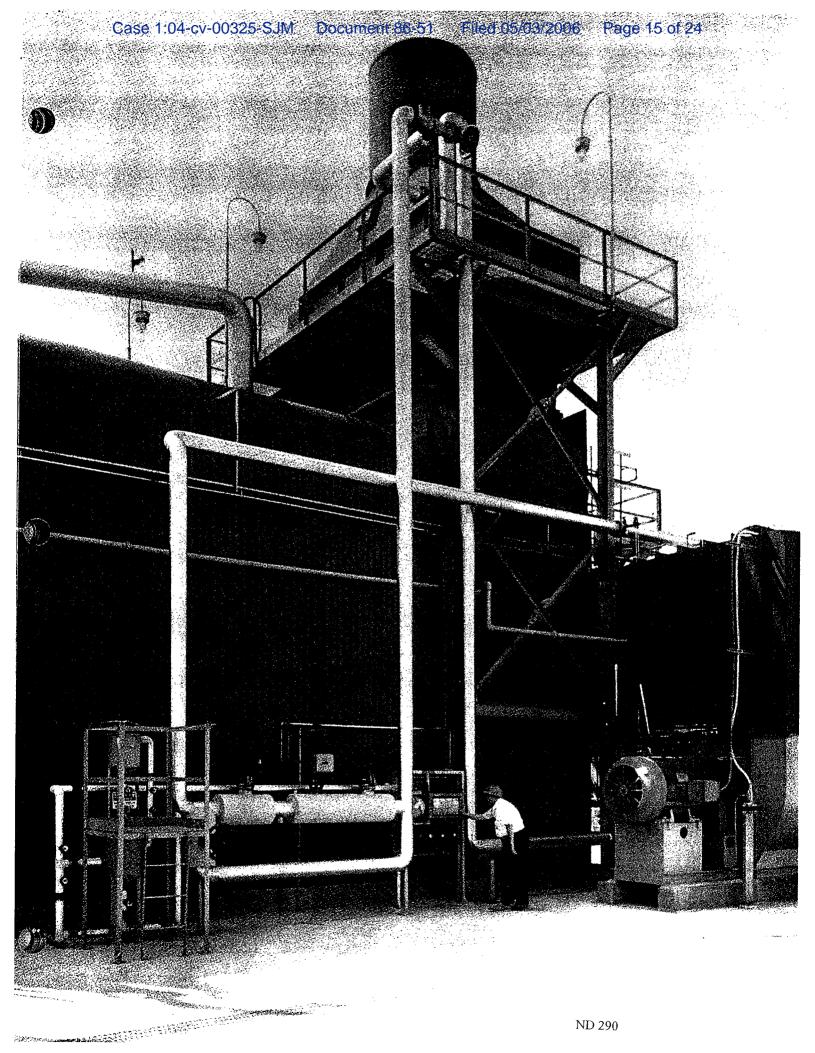
Such KEYSTONES are field-erected when overall physical dimensions are greater than transportation allowances. Pre-fabricated sections are shipped so that the unit can be "packaged" on-site with a minimum of field-erection time. Economical to install, operate, and maintain, the field-erected KEYSTONE can provide up to 500,000 pounds-of-steam per-hour.

right hand page

A field-erected KEYSTONE in a chemical plant, provides 250,000 pounds-of-steam per-hour at 300 PSIG and is equipped with a superheater and a fin tube economizer.









Victory Energy maintains a comprehensive network of convenientlylocated sales representative and service facilities in major U.S. cities to completely surround you with marketing expertise. Whatever your steam generating requirements - from specification to start-up and beyond an experienced sales or service engineer is only minutes away to serve your every need. They're experienced in a wide range of industrial, power, utility and process applications and they know the KEYSTONE inside and out. Every effort is made to provide the right integrated package for each specific application. To assure the ultimate in customer satisfaction, Victory Energy enables them to offer a wide selection of specification choices - fuel burning systems, economizers, air heaters, super-heaters, heat recovery systems, steam purifying systems, flame safety control systems and pollution control systems - each designed and engineered to assure maximum efficiency, economy and reliability of the overall system.

Sales and Service Offices

Atlanta, Georgia Boston, Massachusetts Chicago, Illinois Cincinnati, Ohio Cleveland, Ohio Dallas, Texas Denver, Colorado Detroit, Michigan Houston, Texas Kansas City, Missouri Little Rock, Arkansas Los Angeles, California Lubbock, Texas Memphis, Tennessee Minneapolis, Minnesota New Orleans, Louisiana New York, New York Philadelphia, Pennsylvania Pittsburgh, Pennsylvania Portland, Oregon Raleigh, North Carolina St. Louis, Missouri Salt Lake City, Utah San Francisco, California Shreveport, Louisiana Tampa, Florida Tulsa, Oklahoma Canada (all provinces) Mexico

VICTORY ENERGY

Corporate Headquarters:

Victory Energy Operations, LLC P.O. Box 638 Owasso, OK 74055 918.274.0023 – phone 918.274.0059 – fax www.victoryenergyinc.com





Units	Customer / Project	Steam Output	Steam Conditions	Fuel
<u>Alaska</u>				
1	University of Alaska Fairbanks, AK	100,000 PPH	610 psig/ Superheated	#6 Oil
<u>Arizona</u>				
3	Northern Arizona State Univ Flagstaff, AZ	45,000 PPH	150 psig/ Saturated	Natural Gas
1	Northern Arizona State Univ Flagstaff, AZ	51,500 PPH	150 psig/ Saturated	Natural Gas
California				
1	Chico State College Chico, CA	22,000 PPH	100 psig/ Saturated	Natural Gas # 2 Oil
2	University of California San Diego, CA	50,000 PPH	260 psig/ Saturated	Natural Gas # 2 Oil
. 1	University of California San Diego, CA	80,000 PPH	260 psig/ Saturated	Natural Gas # 2 Oil
1	C. T. Main U.C.L.A. Westwood, CA	160,000 PPH	800 psig / 750°F	Oil Natural Gas
Georgia				
1	University of Georgia Athens, GA	100,000 PPH	190 psig/ Saturated	Natural Gas # 2 Oil
Illinois				
2	University of Chicago Chicago, IL	150,000 PPH	250 psig/ Superheated	Natural Gas # 2 Oil
2	College of DuPage Glen Ellyn, IL	40,000 PPH	150 psig/ Saturated	Natural Gas
3	University of Illinois Champaign, IL	175,000 PPH	325 psig/ Superheated	# 2 Oil
1	Illinois State University Normal, IL	83,000 PPH	250 psig / Saturated	Natural Gas
1	Loyola University Maywood, IL	55,000 PPH	250 psig / Saturated	Natural Gas



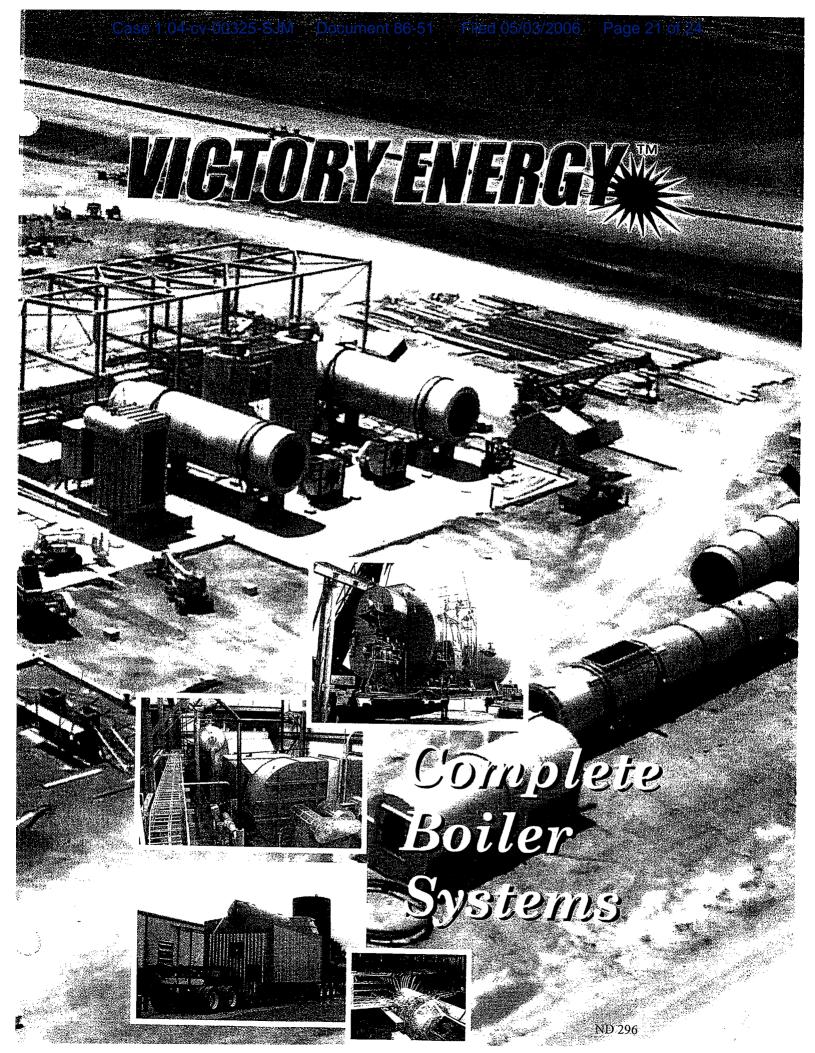
Units	Customer / Project	Steam Output	Steam Conditions	Fuel
Maaaaah		•		
Massachu	isetts			
2	Smith College Northampton, MA	60,500 PPH	150 psig/ Saturated	#6 Oil
2	University of Massachusetts Amherst, MA	60,000 PPH	205 psig/ Superheated	Natural Gas # 2 Oil
<u>Michigan</u>				
1	University of Michigan Ann Arbor, MI	40,000 PPH	125 psig/ Saturated	Natural Gas # 2 Oil
1	University of Michigan Ann Arbor, MI	50,000 PPH	125 psig/ Saturated	Natural Gas # 2 Oil
1	University of Detroit Detroit, MI	20,000 PPH	125 psig/ Saturated	Natural Gas
1	Central Michigan University Mt. Pleasant, MI	150,000 PPH	125 psig/ Saturated	Natural Gas # 6 Oil
1	Eastern Michigan University Ypsilanti, MI	100,000 PPH	125 psig/ Saturated	Natural Gas # 6 Oil
<u>Missouri</u>				
1	Washington University St. Louis, MO	70,000 PPH	350 psig/ Superheated	Natural Gas # 2 Oil
1	University of Missouri Columbia, MO	220,000 PPH	950 psig/ Superheated	Natural Gas # 2 Oil
New York				
2	Cornell University Ithaca, NY	115,000 PPH	205 psig/ Superheated	Natural Gas #6 Oil
4	State University of New York Stony Brook, NY	85,000 PPH	450 psig/ Saturated	Natural Gas #6 Oil
North Car	<u>olina</u>			
2	Meredith College Raleigh, NC	12,000 PPH	125 psig/ Saturated	Natural Gas #6 Oil
1	University of North Carolina Chapel Hill, NC	150,000 PPH	425 psig/ Superheated	Natural Gas # 6 Oil

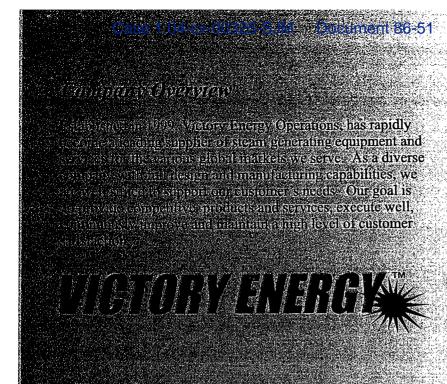


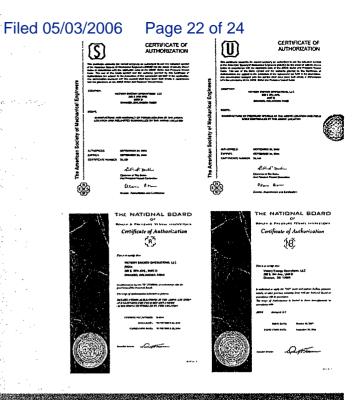
Units	Customer / Project	Steam Output	Steam Conditions	Fuel
<u>Ohio</u>				
2	Youngstown University Youngstown, OH	70,000 PPH	165 psig/ Saturated	Natural Gas # 2 Oil
<u>Oklahoma</u>	1			
1	Oklahoma State University Stillwater, OK	100,000 PPH	280 psig/ Superheated	Natural Gas
2	N.E. State Teachers College Tahlequah, OK	30,000 PPH	100 psig/ Saturated	Natural Gas # 2 Oil
Oregon				
1	University of Portland Portland, OR	23,000 PPH	150 psig/ Saturated	Natural Gas # 6 Oil
1	University of Portland Portland, OR	35,000 PPH	150 psig/ Saturated	Natural Gas # 6 Oil
Rhode Isl	and			
3	Brown University Providence, RI	80,000 PPH	300 psig/ Superheated	Natural Gas # 6 Oil
<u>Texas</u>		-		
1	West Texas University Canyon, TX	20,000 PPH	100 psig/ Superheated	Natural Gas
, 6	University of Texas San Antonio, TX	60,000 PPH	260 psig/ Superheated	Natural Gas # 6 Oil
<u>Vermont</u>			*	
1	University of Vermont Burlington, VT	40,000 PPH	225 psig/ Saturated	Natural Gas #6 Oil
1 .	Syska & Hennessy Inc. University of Vermont Burlington, VT	64,000 PPH	225 psig/ Saturated	Natural Gas #6 Oil



Units	Customer / Project	Steam Output	Steam Conditions	Fuel	
Washington D.C.					
2	American University Washington D.C.	50,000 PPH	125 psig/ Saturated	#6 Oil	
2	Georgetown University Washington D.C.	100,000 PPH	270 psig/ Saturated	Natural Gas # 6 Oil	
1	Georgetown University Washington D.C.	100,000 PPH	500 psig / Superheated	Natural Gas # 6 Oil	
<u>Wisconsin</u>					
1	University of Wisconsin Madison, WI	300,000 PPH	625 psig/ Superheated	Natural Gas # 2 Oil	







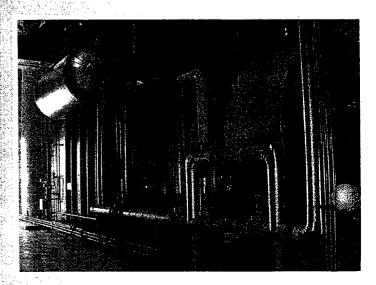


WaterTube Package Keystone® Boilers

With over 3,000 Keystone® watertube package boilers supplied for a variety of steam applications, the Keystone® boiler continues to be recognized as the superior choice in watertube boiler technology. With its symmetrical design, the Keystone® provides a rapid ramp rate and is easy to ship, install, operate and maintain. Keystone® boilers are available from 10,000 pph (5 ton/hr) of steam flow and is very well suited for high pressure superheated service.

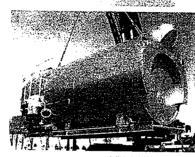
HeurRecovery Steam Generators (HRSGs)

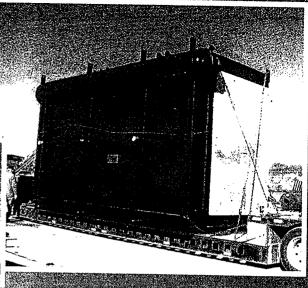
TRSCs are of natural circulation and associate as all welded design to accommodate as an all welded design to accommodate as a commodate as a

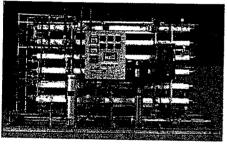


Industrial Boilers

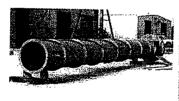
Victory Energy has a wide variety of industrial boilers available. Municipal solid waste heat boilers, high temperature hot water boilers, firetube boilers as well as other various types for a variety of applications.











Ancillary Equipment

In addition to the boiler systems provided we offer a wide range of auxiliary equipment to include ductwork main stack assemblees heat exchangers, economizers, control systems fuel skids, deacrators, feedwater systems and water treatment equipment.

Aftermarket Service

Victory Energy maintains a full time service group available "24 hours per day, seven days a week". We offer rental boiler equipment to include mobile deaerator systems, auxiliary boilers and other reconditioned or secondary market equipment for planned and unplanned boiler system outages. An extensive variety of spare parts is warehoused for immediate shipment.

